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Irrational Beliefs at Work and Their Implications for Workaholism

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Abstract *Introduction* This study examined the associations between work-related irrational cognitions and workaholism. For this purpose, a 16-item work-related irrational beliefs questionnaire (WIB-Q) was developed. *Methods* Employees (n = 913) completed an online survey that included, besides the irrational cognitions scale, measures of negative affect and workaholism. *Results* The results show that four factors could be distinguished, which represent irrational beliefs concerning (1) performance demands, (2) co-workers' approval (3) failure and (4) control. All scales showed good internal consistency. Furthermore, it was found that, after controlling for negative affect, performance demands were associated with workaholism, whereas the remaining types of irrationality were unrelated to workaholism. *Conclusions* In other words, the findings suggest that interventions for workaholism should target irrational self-oriented performance demands and negative emotions. As Rational Emotive Behavior Therapy focuses on identifying and replacing irrational cognitions, it appears a useful intervention technique for the treatment of workaholics.

Keywords Workaholism · Irrational beliefs · Negative emotions · Intervention · Performance demands

Introduction

In our western society, hard work is generally accepted and valued [1]. Several scholars have therefore stressed the need to pay attention to the risks of workaholism [2, 3]. The concept of workaholism was introduced by Oates [4] four decades ago to label his personal obsessive and excessive work behavior. From that time, several studies have been carried out showing that workaholism may potentially result in negative emotional and physical outcomes, such as stress and burnout [5, 6]. Nonetheless, little information is available on effective intervention techniques for reducing workaholism.

Some scholars advocate Rational Emotive Behavior Therapy (REBT) as the therapy of choice for workaholics [7–9]. The underlying principle of REBT is that irrational cognitions play a critical role in causing emotional distress and self-defeating behaviors [10]. Irrational beliefs are rigid, illogical and unreasonable cognitions. Chen [8] argued that such irrational beliefs are the root cause of the workaholic's preoccupation with work. In a similar vein, Cherrington considers workaholism as "an irrational commitment to excessive work." [11, p 257]. Yet, few studies have examined the link between "irrational" cognitions and workaholism [see 12, 13, for exceptions]. For treatment purposes, it is relevant to know to what extent irrational beliefs are associated with workaholism. In addition, a better understanding of the relevance of different types of irrational cognitions for workaholism will help to focus the treatment. However, as no measure of work-related irrational beliefs exists yet, a new scale should be developed first. Therefore, the first aim of the current study is to develop and validate a measure of work-related irrational beliefs. The second aim is to test the relationships between irrational beliefs and workaholism.

Workaholism

Since Oates defined workaholism as "the compulsion or uncontrollable need to work incessantly" [14, p 11],

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various other conceptualizations of the phenomenon have emerged. An influential definition was proposed by Spence and Robbins stating that a "real" work addict is "highly work involved, feels compelled or driven to work because of inner pressures, and is low in enjoyment of work" [15, p 162]. Scott, Moore, and Miceli [16] reviewed the characteristics attributed to workaholics to arrive at a better construct definition. They distinguished three common denominators: (1) workaholics invest much time in work activities when they have the opportunity to do so; (2) workaholics constantly think about work when they are not working; (3) workaholics work longer hours than is expected of them to meet organizational or economic standards. More recently, Ng, Sorensen, and Feldman [17] defined workaholism as reflecting affect, cognition, and behavior. They typified workaholics as those who are obsessed with working, who commit long hours to work, and who enjoy working. It should be noted that, according to Ng et al., workaholics enjoy the *act* of working rather than the actual work they do. In a similar vein, Porter [18, p 151] wrote that "joy in work is not a part of workaholism viewed as an addiction". In line with Schaufeli et al. [19], we view work enjoyment as being an independent psychological phenomenon, called work engagement. Schaufeli, Taris, and Bakker distinguish two components in workaholism; that is working excessively and working compulsively. According to their definition, workaholism is an "obsessive, irresistible inner drive to work excessively hard" [19, p 219]. As it coincides with the original definition of Oates [14], we have adopted this definition in the present study.

Workaholism is found to have an impact on several important life domains. With regard to the work domain, workaholics often appear to have poor relationships with their colleagues [15, 20], probably, because they frequently feel the need to control them and have difficulties with delegating work [21]. Given that the excessive amount of time they spent working leaves little time for other activities, also the social life outside work suffers from the compulsive work habits of workaholics [22]. Moreover, work addicts feel less closely related to their family [23] and experience more marital problems [24] than non-workaholics. Finally, research also shows negative effects of work addiction on health. As workaholics work long hours, they often lack the opportunities to recover from work, which may cause exhaustion [6, 19, 25]. Furthermore, workaholics report more mental distress and subjective health complaints than others [5, 26, 27].

No association has been found between workaholism and sickness absence [28, 29]. In spite of their high levels of work involvement and exhaustion, workaholics do not seem to be less absent from work than their less addicted counterparts. According to Taris et al. [30] this could be caused by workaholics' unwillingness to take leave, even when they are ill. This workaholic attitude could also have a profound impact on rehabilitation efforts for individuals recovering from an injury or illness. As workaholics have a strong work ethic [18] and tend to deny their problems [7], they may return to work before they are sufficiently recovered, which could have detrimental health consequences in the long run.

Measurement of Work-Related Irrational Beliefs

Irrational beliefs are found to be important for human functioning and wellbeing [e.g., 31, 32]. Chen [8] argued that also workaholism may result from a disturbance in the cognitive interpretation. Workaholics could hold irrational beliefs, such as "I am the only person in the department who can do this work" or "If I do not finish my work on time, a disaster will happen". Although a growing number of scales to measure irrational beliefs exists, the psychometric properties of these measures vary considerably. Terjesen et al. [33] reviewed 14 measures of irrational beliefs regarding reliability, validity and norms. While the majority of these scales showed good reliabilities, the validity and their utility for assessment needs improvement. For instance, some of the existing measures of irrational beliefs were found not to assess only beliefs, but also emotional or behavioral responses. Such content overlap may inflate correlations between irrational beliefs and outcomes [34]. Furthermore, Terjesen et al. showed that, on average, the measures were quite lengthy with a mean number of 43.6 items. If a measure is to be administered repeatedly, for instance to assess change due to an intervention, it is important that this measure is as short as possible. Finally, although there are measures developed for specific populations and situations (e.g., children, gamblers), to our knowledge, no irrational beliefs measure is specifically designed to assess irrational beliefs in the work place. Yet, it is likely that in the case of workaholism, the irrational beliefs are related to its context, which is work. As we will argue below, the literature seems to suggest that at least four work-related irrational beliefs are of importance for workaholism, namely irrational beliefs regarding: (1) performance demands, (2) co-workers' approval, (3) failure, and (4) control. Altogether we aim to validate a work-related irrational beliefs measure that only includes cognitive (and no emotional) content.

Study Hypotheses

In this study, we examine the assumption that the behavior of workaholics is to a significant extent rooted in four harsh beliefs. First, workaholics seem to have the irrational idea

that they can only like themselves if they perform well and better than others [12, 35]. Put differently, they seem to base their sense of self-worth on their performances. Hence, we expect that high scores on irrational beliefs about performance demands (e.g., "I must do my work perfectly") are positively associated with workaholism (Hypothesis 1).

Furthermore, it has been suggested that workaholics are individuals that have a compulsive drive to gain approval [12, 15, 36]. Workaholics seem to be afraid of losing approval of significant others; they only feel accepted if they do a perfect job [37]. Therefore, high scores on irrational beliefs about approval of others (e.g., "I must be approved by my colleagues") are expected to be positively associated with workaholism (Hypothesis 2).

According to Berglas [38], catastrophizing is also common among workaholics. That is, workaholics tend to overestimate the consequences of failure. This is reflected by the fact that workaholism shows a strong relationship to neuroticism [39, 40], of which worry is a core element. For that reason, we anticipate that overrating the consequences of failure (e.g., "It is awful if I don't receive promotion") is related to high levels of workaholism. We hypothesize that high scores on irrational beliefs about failure are positively related to workaholism (Hypothesis 3).

Finally, several authors have proposed that workaholism is associated with obsessive compulsiveness [41–43], which reflects a preoccupation with matters of control; workaholism seems characterized by a lack of confidence and control over circumstances. We therefore predict that irrational beliefs of control (e.g., "I can only cope with work situations when they are predictable") are positively associated with workaholism (Hypothesis 4).

In sum, using the new measure of irrational beliefs, we aim to examine the associations between four irrational beliefs and workaholism. However, since there are strong indications that negative emotions play an important role in the development and maintenance of workaholism [28, 44], the role of negative affect cannot be ignored when studying the phenomenon of workaholism. More specifically, it has been argued that workaholics work so hard in order to avoid the negative emotions that are associated with not working [17, 21] or to regulate their negative emotions by working [45]. To rule out the possibility that the relationship between irrational cognitions and workaholism is attributed to negative affect, we will partial out its effect. In this way, we are able to examine the unique contribution of irrational cognitions to workaholism. The model tested is that work-related beliefs predict workaholism, also after specifically controlling for the direct influence of negative affect on workaholism. This model is presented in Fig. 1.

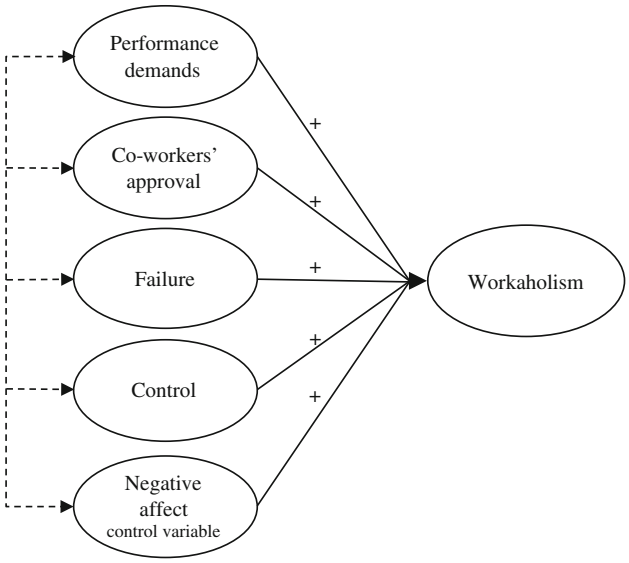

Fig. 1 Heuristic model for the relationships between work-related beliefs and workaholism controlling for negative affect. In the analyses this model is extended with effects of age and sex on workaholism

Methods

Participants and Procedure

Participants were recruited through a web link to the study survey that was included in an online magazine about work-life balance, issued by a Dutch training and consultancy firm. The magazine was sent to approximately 14,600 individuals, of which 1,236 responded. Ultimately, 913 provided completed questionnaires, indicating a response rate of 6.3 %. Participants gave their consent to participate in the study by means of completion of the online questionnaire. 478 respondents were female, and the sample had a mean age of 43.8 years (SD = 9.1; range = 18–68). Nearly half of the sample (49.1 %) was in a leadership position. The majority of the sample was highly educated with 77.3 % holding at least a bachelor's degree.

Most participants (83.4 %) were married or cohabiting. The participants worked approximately 6.2 years (SD = 5.8) in their current jobs and 12.4 years (SD = 9.4) within their current companies. Participants reported an average of 35.1 contract hours (SD = 5.9) per week, but indicated to actually work 40.4 hours (SD = 9.6) per week. Participants were mainly employed in business services (19.4 %), public administration (16.9 %), industry (14.7 %), health care (13.1 %), and financial services (8.2 %). The remaining part (27.7 %) worked in various sectors, such as construction and transportation (see Table 1).

Table 1 Sample characteristics ($n = 913$)

	M (SD)
Age (in years)	43.8 (9.1)
Years at job	6.2 (5.8)
Years in company	12.4 (9.4)
Contract work hours per week	35.1 (5.9)
Actual work hours per week	40.4 (9.6)
n (%)	
Gender	
Females	478 (52.4)
Males	435 (47.6)
Leadership position	
Yes	448 (49.1)
No	465 (50.9)
Education	
Lower	29 (3.2)
Intermediate	178 (19.5)
Higher	706 (77.3)
Marital status	
Cohabitating or married	761 (83.4)
Single	137 (15.0)
Other	15 (1.6)
Sector	
Public administration	154 (16.9)
Financial services	75 (8.2)
Industry	134 (14.7)
Health care	120 (13.1)
Business services	177 (19.4)
Construction	24 (2.6)
Wholesale and retail trade	29 (3.2)
Transportation	18 (2.0)
Education	46 (5.0)
Other	136 (14.9)

Measures

Workaholism was assessed using the short Dutch Workaholism Scale (DUWAS) [46, 47] which comprises two dimensions: (1) Working Compulsively (WC), which includes five items (e.g., "I feel that there's something inside me that drives me to work hard") and (2) Working Excessively (WE), which comprises five items as well (e.g., "I overly commit myself by biting off more than I can chew"). The WC scale is based on the Drive scale of the Workaholism Battery (WorkBat) [15], whereas the WE scale is derived from the Compulsive Tendencies scale of the Work Addiction Risk Test (WART) [48]. Both scales are rated on a 4-point scale (1 = "never", 4 = "always"). The correlation between the subscales was .56. The internal consistencies of WC and WE were .79 and .73, respectively.

Negative affect was measured with a subscale of the Job-related Affective Well-being Scale (JAWS) [49] in its shortened Dutch version [50]. The scale comprises six items ($\alpha = .86$, e.g., "angry", "depressed"). The participants responded to a 5-point Likert scale (1 = "(almost) never", 5 = "(almost) always").

Work-related irrational beliefs were assessed with the newly developed questionnaire, dubbed the Work-related Irrational Beliefs Questionnaire (WIB-Q), which is described below.

Construction of the Work-Related Irrational Beliefs Questionnaire

The Belief Scale [51] was used as starting point for developing the WIB-Q, as this questionnaire was judged to be one of the few questionnaires tapping beliefs instead of affect [52]. As we expected that beliefs about performance demands, approval, failure and control would be of importance for workaholism, four subscales of the Belief scale were selected that tapped these four type of beliefs respectively: (1) need for achievement, (2) need for approval, (3) awfulizing and (3) low frustration tolerance. We began by reformulating the eight original items in such a way that they would fit in the work context (e.g., approval of significant persons was changed into co-workers' approval). For each originally two-item subscale, we developed four additional belief items. Next, three experts independently (1) tried to match all 24 items with the corresponding belief (four types of beliefs and six items per belief) and (2) assessed the clarity of the wording of these items. The results of this procedure urged us to eliminate four items because they were incorrectly matched. In addition, we rewrote several items as they were reported to be confusing. At the end of this stage, a scale with 20 items was retained with five items per subscale (1 = "completely disagree", 5 = "completely agree"). The items of the WIB-Q are provided in Table 2.

Results

Testing of the Factor Structure of the WIB-Q

A principal components analysis (PCA) was conducted to assess the underlying factor structure among the 20 items using an oblique (direct oblimin) rotation. All of the items had communalities above .40. Bartlett's test of sphericity was significant (7,189.35, $p < .001$) and the Kaiser–Meyer–Olkin measure of sampling adequacy was sufficiently high (0.91), indicating that the data were suitable for PCA. The scree plot indicated that four factors could be extracted, which accounted for 59 % of the variance in the

Table 2 Items and factor loadings of principal components analysis (PCA) and confirmatory factor analysis (CFA), and final cronbach's alphas of the Work-related Irrational Beliefs Questionnaire ($n = 913$)

	PCA				CFA			
	1	2	3	4	1	2	3	4
Performance demands ($\alpha = .74$)								
1. At work, I have to achieve in order to be satisfied with myself	−.53				.55			
2. I must perform well at my work to feel good about myself	−.57				–			
3. I must do my work flawlessly	−.75				.72			
4. I have to be the best at work	−.77				.60			
5. I do not allow myself to make mistakes at work	−.63				.73			
Coworkers' approval ($\alpha = .80$)								
6. I need the approval of my colleagues to be able to do my work well		.83				.75		
7. It is important to me that colleagues are pleased about me		.86				.70		
8. I find it important what other people at work think of me		.73				–		
9. To feel worthy, I need the approval of my colleagues		.64				.76		
10. To be happy, I must be liked by my colleagues		.61				.66		
Failure ($\alpha = .77$)								
11. If I make a mistake, the consequences are terrible			.80				.64	
12. It is terrible when I do not finish work on time			.73				.68	
13. It is awful if I do not function properly at work			.56				.61	
14. It is awful when things turn out badly at work			.76				.79	
15. It is terrible to forget a work appointment			.54				–	
Control ($\alpha = .83$)								
16. I cannot stand having any ambiguity in my work				−.53				.69
17. I can only cope with work situations when they are predictable				−.78				.73
18. I am able to cope with unexpected events in my work (reversed)				.82				–
19. I cannot cope with having to take risk at work				−.73				.71
20. I cannot cope with uncertainty at work				−.77				.87

item pool. The analysis produced a simple structure with the items clearly clustering on its respective factor (>.53), and low factor loadings on the other factors (<.35). The four factors were: (1) *performance demands* (five items, $M = 3.38$, SD = 0.65, $\alpha = .77$), (2) *co-workers' approval* (five items, $M = 3.27$, SD = 0.69, $\alpha = .83$), (3), *failure* (five items, $M = 2.96$, SD = 0.68, $\alpha = .78$), and (4) *control* (five items, $M = 2.40$, SD = 0.72, $\alpha = .83$). Correlations between the factors ranged from .21 to .43.

Confirmatory factor analysis (CFA) was conducted to confirm the dimensionality of the WIB-Q using Amos 16 [53]. Based on the results of the PCA, it was anticipated that four dimensions could be discriminated. Goodness of fit was evaluated using (1) the Chi square statistic (χ^2),[1] (2) the comparative fit index (CFI), (3) the Tucker Lewis index (TLI) and (4) the root mean square error of approximation (RMSEA). Chi square difference ($\Delta\chi^2$) tests were used to compare the fit of competing models that were nested [54]. For CFI and TLI, values of >.90 indicate acceptable model fit, whereas for the RMSEA, values <.08 indicate acceptable fit. The fit indices are shown in Table 3.

Table 3 Fit indices of the confirmatory factor models ($n = 913$)

Model	χ^2	*df*	*p*	CFI	TLI	RMSEA	$\Delta\chi^2$	Δdf
M1	2,882.97	170	.001	.62	.57	.13		
M2	933.97	164	.001	.89	.87	.07	1,949	6**
M2°	552.77	98	.001	.92	.90	.07	381.20	66**

Model = type of model based on number and configuration of factors; M1 = Hypothesized model without controlling for negative affect; M2 = Hypothesized model controlling for negative affect; ° = Hypothesized model with trimmed paths; χ^2 Chi square, *df* degrees of freedom, *CFI* comparative fit index, *TLI* Tucker Lewis index, *RMSEA* root mean square error of approximation, $\Delta\chi^2$ difference in Chi square; Δdf difference in degrees of freedom; *ns* not significant, ** $p < .001$

The one-factor model with all items loading on a single common factor (M1) did not fit the data. The hypothesized four-factor model (M2) fitted significantly better than the

[1] As the Chi square statistic is sensitive to sample size and model complexity, other indexes as adjuncts to the Chi square statistic are used to assess model fit.

Table 4 Means, standard deviations and correlations of the study variables ($n = 913$)

	M	SD	1	2	3	4	5	6	7	8
1. Age	43.78	9.13	–							
2. Sex	–	–	−.19**	–						
3. Workaholism	2.37	0.54	−.17**	.09*	–					
4. Performance demands	3.28	0.71	−.21**	.03	.42**	–				
5. Co-workers' approval	3.20	0.72	−.21**	.02	.26**	.41**	–			
6. Failure	2.85	0.71	−.18**	.05	.41**	.55**	.36**	–		
7. Control	2.45	0.78	−.18**	.12**	.18**	.40**	.40**	.48**	–	
8. Negative affect	2.32	0.80	−.17**	.03	.46**	.28**	.33**	.38**	.42**	–

Sex: 0 = male, 1 = female; * $p < .01$, ** $p < .001$

one-factor model and had reasonable fit estimates. For reasons of parsimony, and as indicated by the modification indices, we deleted one item of each scale (items #2, #8, #15 and #18). These items had either low loadings or high overlap in wording with other statements. After eliminating these items, the model (M2°) showed a good fit to the data and yielded a better fit than the comprehensive model. All items had satisfactory factor loadings on the factors that they were assumed to represent, with standardized regression weights ranging from .55 to .87. Factor loadings of the WIB-Q items and cronbach's alphas of the four subscales are presented in Table 2. The correlations between the latent factors ranged between .42 and .71.

To conclude, both PCA and CFA supported a four-component model of irrational beliefs. Therefore, four subscales of irrational beliefs were employed in this study.

Table 4 shows the means, standard deviations and correlation coefficients of the study variables. Overall, work-related beliefs are moderately to strongly interrelated. Furthermore, work-related irrational beliefs and negative affect are highly related. The relationships between work-related beliefs, negative affect and workaholism are in the expected direction.

Hypotheses Testing

In order to examine the influence of negative affect, two sets of analyses were conducted: one analysis without and one with negative affect as covariate. It was expected in Hypotheses 1–4 that after controlling for negative affect, the four work-related beliefs would be significantly related to workaholism. Structural equation modeling (SEM) with latent variables, using Amos 16 [53], was employed to examine the four hypotheses simultaneously. Solutions were obtained on the basis of maximum-likelihood estimation. In order to adjust for potential confounding effects of demographics, age and sex were included as covariates in analyses. Based on our previous argumentation, the latent variable workaholism was represented using working compulsively and working excessively as separate indicators. The remaining latent variables, four irrational beliefs and negative affect, were in each case represented by two randomly created parcels [55]. All exogenous variables were permitted to be correlated with one another. Data screening of the observed indicators indicated no significant non-normality of the data with skewness less than three and kurtosis less than four [56]. For this analysis, the same selection of fit indices was used as for the CFA. Table 5 provides an overview of these fit indices.

Table 5 Fit indices of the hypothesized non-nested structural models ($n = 913$)

Model	χ^2	*df*	*p*	CFI	TLI	RMSEA
M1	242.24	35	.001	.95	.90	.08
M2	266.25	51	.001	.96	.93	.07

Model = type of model based on number and configuration of factors; M1 = Hypothesized model without controlling for negative affect; M2 = Hypothesized model controlling for negative affect; χ^2 Chi square, *df* degrees of freedom, *CFI* comparative fit index, *TLI* Tucker Lewis index, $\Delta\chi^2$ difference in Chi square, *RMSEA* root mean square error of approximation

The fit indices suggest that the presented model without negative affect as covariate (Model 1; M1) shows reasonable fit to the data. Figure 2 shows the significant paths coefficients of this model. For reasons of economy, error terms, factor loadings and disturbance terms are not shown in the figure. As was hypothesized, the performance demands variable is positively related to workaholism, whereas, against our earlier hypothesis, co-workers' approval is not related to workaholism. The results furthermore show that failure is positively related, while control is not related to workaholism. Altogether, the covariates (sex and age) and irrational beliefs explain 29 % of the variance in the latent endogenous variable workaholism.

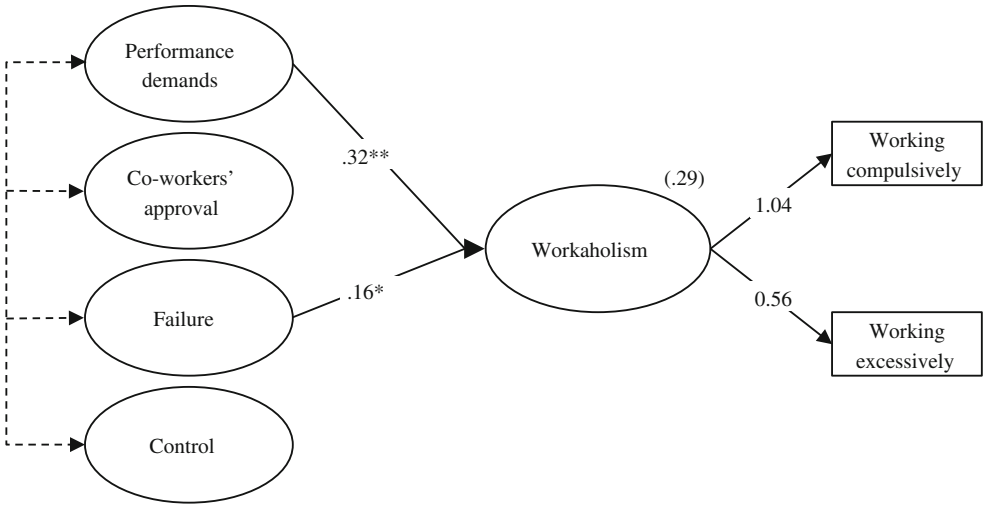

Fig. 2 The significant paths in de hypothesized model without controlling for negative affect: M1; ** $p < .001$

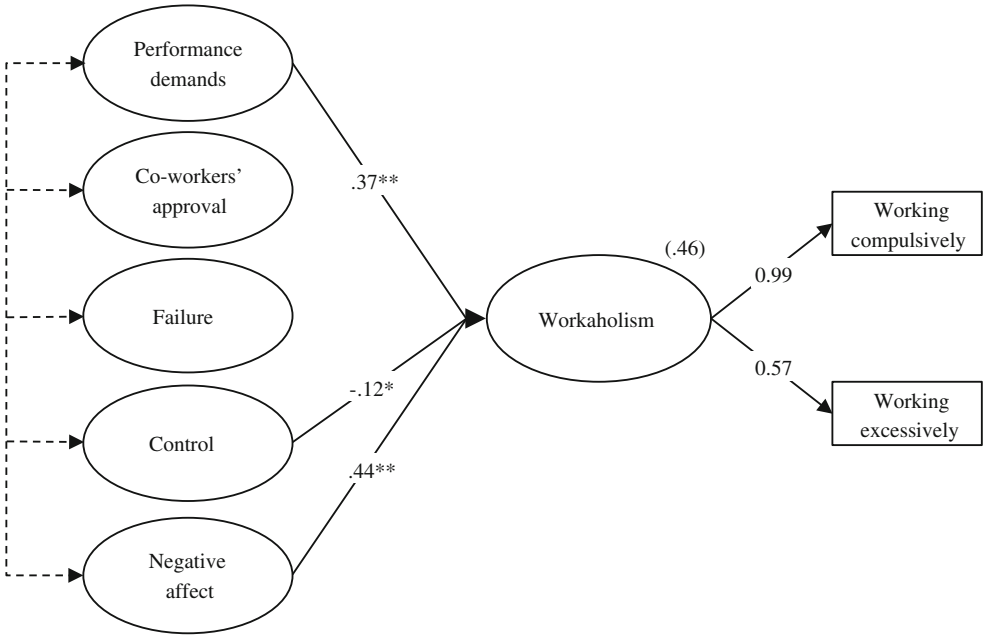

Fig. 3 The significant paths in de hypothesized model after specifically controlling for negative affect: M2; * $p < .01$, ** $p < .001$

In order to partial out the influence of negative affect in the relationships between irrational beliefs and workaholism, we also tested a model that includes negative affect as covariate. This extended model (Model 2; M2) generally fits the data well. Figure 3 shows the significant relationships between the latent variables. The analysis reveals that negative affect is strongly and positively related to workaholism. As in the previous model, the path coefficient that links performance demands and workaholism is positive and statistically significant. Co-workers' approval is still not related to workaholism. Finally, against expectations, failure is not significantly related, whereas control is negatively related to workaholism.

In other words, our results clearly support the expectation that irrational beliefs regarding performance demands are related to workaholism (Hypothesis 1). No support is found for the notion that co-workers' approval is related to workaholism (Hypothesis 2). After controlling for negative affect, failure was not significantly related anymore to workaholism. Put differently, Hypothesis 3 is also not supported. In addition, in the model including negative affect as covariate, the relationship between control and workaholism is significant. However, it is in the opposite direction from what was expected. This result seems to indicate that negative affect is a negative suppressor effect for control and is therefore not interpreted. Note that in the

model in which negative affect was not included, there was also no support for Hypothesis 4. Altogether, the covariates (age and sex), negative affect and irrational beliefs explain 46 % of the variance in the latent factor of workaholism.

In both models (M1 and M2), sex is weakly but significantly related to workaholism ($\beta = .08/.10$, $p < .01$, respectively), indicating that women are suffering slightly more from workaholism than men. Age is not related to workaholism in our analyses.

Discussion

In the current study, we investigated the relationship between irrational cognitions and workaholism. We hypothesized that setting unrealistic high performance standards, being dependent on the approval of co-workers, being afraid of failing and intolerance for uncontrollable situations at work would be associated with workaholism. In order to test our hypotheses, we developed a work-related irrational beliefs questionnaire that consisted of these four types of work-related irrational beliefs: (1) performance demands, (2) co-workers' approval, (3) failure, and (4) control. The data supported the proposed four-dimensional structure of irrational beliefs. Subsequent reliability analyses revealed that all four scales have sufficient internal consistency.

We then examined to what extent these irrational beliefs were related to workaholism, that is working compulsively hard. Given evidence that negative emotional states are associated with workaholism [28, 44], we controlled for the effect of negative affect in our second set of analyses. This allowed us to more fully isolate the unique predictive value of irrational cognitions on workaholism. Our study confirmed the notion that negative affect was related to workaholism, indicating that also negative emotions are driving forces of the work addiction process. In addition, it was found that after controlling for negative emotions, holding unrealistic high standards of achievement for oneself is associated with workaholism. In other words, having high performance expectations appears to be associated with the compulsive drive to work excessively hard. Furthermore, being dependent on the approval of co-workers was not related to workaholism. Put differently, the need to be liked by colleagues is not specific to workaholics; it is not related to their compulsive and excessive work behavior. Our analyses also do not support the idea that failure anticipation is an irrational belief that determines workaholism. This indicates that being vulnerable to high levels of concern is not at the basis of the workaholics' excessive behaviors. Finally, control was also not related to workaholism, and after controlling for negative affect a negative relationship occurred. As the correlation between control and workaholism originally was positive, it suggests that the negative regression weight of control is most probably a statistical artifact known as a suppressor effect. That is to say, the variable negative affect seems to enhance the importance of control (in the opposite direction of what would be expected) by means of suppressing irrelevant variance in it [57]. Therefore, this finding is not further taken into consideration. Finally, there was substantial shared variance between negative affect and work-related irrational cognitions, suggesting that these variables partially overlap. Accordingly, the effect of negative affect should not be ignored in examining irrational beliefs.

Our results predominantly indicate that the belief that one has to meet stringent performance standards is a key irrational cognition of workaholics. This coincides with the notion that workaholics have a high, and probably unrealistic, need to achieve [58]. It is also in line with the work of Van Beek et al. [59] who studied the relationship between working hard and work motivation, using Self Determination Theory (SDT) [60]. They found in a study among Chinese nurses and physicians that workaholism was positively related to introjected regulation, which results from internalizing external standards and pressures such as threats of guilt and punishment. This means that the work behavior of workaholics is regulated by internalized standards, which are not fully accepted as their own. Individuals who are driven by introjected regulation are likely to work hard in order to avoid feeling bad about themselves. Our findings support the idea that workaholics have internalized (irrational) external performance standards to protect their self-worth. In other words, irrational beliefs about high performance standards that have to be met at work could act as a vulnerability factor for workaholism.

We did not find evidence for the assumption that workaholic employees are to some extent motivated by obtaining approval from significant others at work, such as the supervisor [12, 15]. Surprisingly, however, this non finding seems also to be in line with the finding of Van Beek and colleagues [59] who observed that workaholism is not related to external regulation. According to SDT, individuals are externally regulated when their objective is to obtain external rewards or avoid receiving external punishments. For instance, an employee who engages in externally regulated work behavior is motivated to avoid disapproval by his or her manager.

Although workaholism has previously been linked to neuroticism [5, 43], the current study shows that the phenomenon does not seem to be related to the neurotic belief that a situation is far worse than it actually is. The results show that after we controlled for negative affect the significant positive relationship between the irrational belief

of failure and workaholism disappeared. Although workaholics have high performance standards, they do not seem to overestimate the consequences of bad events. Nevertheless, the possibility remains that the need for achievement mediates the relationship between failure and workaholism. That is, because workaholics overvalue the consequences of not being perfect, they place extra high demands on themselves, which could then lead to workaholic behaviors. Furthermore, negative affect apparently overlaps with beliefs of failure. One reason for the overlap between negative affect and failure may be that they are causally related. For example, people who are prone to experiencing negative emotions may tend to overestimate the consequences of making mistakes. Altogether, this could confirm the notion of Ellis [61] that cognitions, emotions, and behaviors are practically never unrelated but integrally interact with and include each other. Longitudinal research is needed to evaluate this possibility. Finally, against expectations, we found that irrational beliefs concerning control are not related to workaholism. On basis of the current correlational data, we can merely conclude that, even after controlling for negative affect, there was still a strong relationship between performance demands and workaholism. In other words, their association is not based on the common influence of negative affect.

Limitations and Future Research

There are a number of limitations to our study that deserve mentioning. Firstly, data was drawn from a convenience sample of employees which carries the risk of selection bias. A possible selection effect that might have occurred is self-selection, i.e. those who were motivated or interested, participated in the survey. Unfortunately, we did not collect data among employees who refused to participate in the study, so we could not control for selective non-response. This limits the external validity of our study. Furthermore, convenience samples have the possibility of not being representative of the general population of employees. For instance, the current sample over represents highly educated individuals, which appears to be a risk group for developing workaholism [62]. In order to formally confirm the robustness and generalizability of the findings, more research on work-related irrational cognitions and workaholism with diverse and representative samples is needed. Our study was also limited by the use of cross-sectional data, so that caution must be exercised in the causal interpretation of the observed associations. Future studies should use longitudinal data to explore the temporal processes involved in irrational cognitions and workaholism.

Despite its limitations, the current study provides opportunities for further investigation. First of all, future research could examine more closely how irrational cognitions are associated with concepts that are narrowly related to workaholism. This may demonstrate whether our findings are specific to workaholism, or also apply to other work-related states, such as burnout. In other words, it would provide insight into the extent to which work-related beliefs have a differentiating value. In future research, it should also be analyzed to what extent work-related irrational cognitions are different from general irrational cognitions. An example of a general irrational belief is: "I cannot live without the approval of important people in my life". This would shed light on questions like "Are work-related cognitions better (or worse) predictors of one's level of workaholism in comparison to general irrational cognitions?" or "Do work-related cognitions play a different role in the development of workaholism than general irrational cognitions?". Finally, research has raised the possibility that irrational beliefs are not completely opposite to rational cognitions but are rather independent constructs [63]. Therefore, it would be interesting to construct a scale with work-related irrational ánd rational cognitions. Rational beliefs are true, sensible and functional ideas such as "I am a worthy person even if I do not perform well at work". Future research could disentangle more closely to what extent we can differentiate between functional and dysfunctional work-related cognitions and how they relate to workaholism.

Practical Implications

The findings of the current study contribute to the methodology clinical professionals use to quantify work-related irrational cognitions. More specifically, as irrational cognitions can be distinguished in at least four separate constructs, it should be assessed accordingly rather than through the use of a unitary irrationality measure. Consequently, our findings provide an important elaboration of other models that incorporate cognitive responses at work. One of these models is the Work style model [64], which is based upon the hypothesis that people differ in their behavioral, physiological, emotional and cognitive responses to work demands. The model postulates that these individual differences may explain the etiology, exacerbation, and/or maintenance of health symptoms, in particular upper limbs symptoms and work disability. The current study seems to be an extension of the cognitive dimension of work style. It sheds light on other cognitive aspects that may impact work dysfunction besides self-imposed workload (i.e., performance demands) and social reactivity (i.e., approval of coworkers) [65], that is, the need for control and beliefs of failure.

Moreover, it has already been suggested that Ellis' REBT seems to provide the counselor with both the theoretical outline and the appropriate intervention tools in

counseling workaholic clients [7]. REBT is founded upon the idea that dysfunctional behaviors are not exclusively caused by environmental events but rather stem from irrational thinking [66, 67]. In the current study, it was indeed established that irrational beliefs are linked to workaholism. As REBT focuses on disputing or restructuring individuals' irrational beliefs and changing them in favor of more functional beliefs, it may offer a promising intervention strategy for workaholics. Furthermore, the results of our study may guide the way workaholism is targeted by REBT interventions. That is, clinical professionals or trainers might target irrational performance demands and negative affect first, rather than focusing on other forms of irrationality, such as dependency of for approval, and beliefs of failures or control. The findings also have implications for the social environment of the workaholic. Work and family environments may unwittingly reinforce the extreme demands workaholics impose on themselves. Therefore is it important that the social network is aware of the workaholics' vulnerability, stimulates realistic performance standards and clearly communicates expectations.

Conclusion

In summary, the current study examined the associations between irrational beliefs and workaholism. The results indicate that four forms of work-related irrational cognitions could be distinguished. These are irrational beliefs concerning (1) performance demands, (2) approval of coworkers (3) failure, and (4) control. Performance demands, i.e. holding unrealistic high demands for oneself, was found to be a risk factor for workaholism. Against expectations, the other three irrational cognitions did not seem to be relevant for workaholism. These results were found after controlling for negative affect, indicating that negative affect could not be an explanation for the results. Taken together, these findings highlight the psychological vulnerabilities inherent in workaholics and suggest that workaholics should benefit from interventions designed to reduce irrational performance demands.

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